UNITED STATES ARMY
TARDEC
TANK-AUTOMOTIVE RESEARCH DEVELOPMENT AND ENGINEERING CENTER

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U.S. ARMY TARDEC LEADING TRANSFORMATIONAL SCIENCE AND TECHNOLOGY FOR CURRENT AND FUTURE FORCES

TARDEC Showcases Commitment to Superior Technology for a Superior Army at the 24th Army Science Conference

ORLANDO, Fla. and WARREN, Mich. – Nov. 29, 2004 – The U.S. Army's Tank-Automotive Research, Development and Engineering Center (TARDEC) will demonstrate the latest developments in advanced military automotive technology at the 24th Army Science Conference in Orlando, Fla., November 29 – December 2, 2004. Highlights will include presentations made on power and energy, force protection and unmanned systems used in Operation Iraqi Freedom. In addition, TARDEC will showcase a Coalition Interoperability Experiment with Defence Research & Development Canada (DRDC).

"Army science and technology developments are driven by an evolving 21st Century battlefield environment," said Dr. Richard McClelland, Director of TARDEC. "The breadth of TARDEC's emerging technologies highlighted in this year's Army Science Conference underscores our organization's relevance in transforming the Current and Future Forces."

Coalition Interoperability Experiment

TARDEC's Coalition Interoperability Experiment with DRDC was designed to demonstrate how two coalition forces can communicate with each other through linked crew station simulators. The project links the Canadian Multi-Mission Effects Vehicle (MMEV) and the American Crew Integration and Automation Test-bed (CAT), with Canadian and American vehicle crews operating their own and each other's equipment in a virtual future combat situation. The information gathered from this experiment will advance efforts to improve Army interoperability and assess the merits of future Canadian and American technologies in a cooperative fashion. In addition, this experiment will help maximize the research and development investments of both countries.

The MMEV will result in a virtual vehicle that simulates a family of advanced technologies with futuristic performance characteristics, enabling the evaluation of command and control, technology performance, multi-mission capability, human performance and interoperability with U.S. forces. The CAT – along with the Robotic Follower Advanced Technology Demonstrations – is part of the U.S. Army's Unit of Action vehicle electronics integration efforts. In leading this effort, TARDEC engineers are testing an advanced two-man crew station that will give Soldiers full situational analysis while allowing them to control unmanned recognition, indirect vision driving, autopilot, robotic follower path generation, drive by wire, positive navigation and embedded simulation.

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Advanced Military Vehicle Technology Demonstrations

The Army Science Conference will feature presentations of papers and posters judged as best among those submitted by scientists and engineers from government, industry and academia. TARDEC will lead three panel discussions this week on power and energy, vehicle survivability and unmanned systems. Authors of the most outstanding papers have been selected to receive special recognition; TARDEC personnel presenting award-winning oral presentations will discuss the following topics:

- Advanced Thermal Management for Military Applications
- Determination of Laminar Flame Speed of Diesel Fuel for Use in a Turbulent Flame Spread Premixed Combustion Module
- Run-Time Assessment of Vehicle-Terrain Interactions
- The Evaluation of a Motion Base Driving Simulator

In addition, TARDEC employees will showcase posters on topics including 3D imaging and sensor fusion, ultra-wideband Radio Frequency (RF) technology and dynamic waypoint navigation.

Army Vehicle Technologies

TARDEC will also highlight a number of its advanced military vehicle technologies in Booth #400 in addition to the Coalition Interoperability Experiment with DRDC.

The **Stryker Battle Command on the Move** is an upgraded, Soldier-friendly command post that exemplifies the latest radios, computers and networking components. This program has yielded more than 2,000 modification parts for the Stryker and provides Stryker-based teams in Iraq a "one stop shop" to meet rapid design and implementation requirements created by evolving field conditions.

The **HMMWV Armor Survivability Kit (ASK)** addresses Soldier concerns that the standard HMMWV did not protect drivers or passengers from small arms or Integrated Explosive Device (IED) fragments. To date, more than 9,000 kits have been produced, with more than 8,300 fielded in Iraq and Afghanistan. This program was recently awarded the 2004 Research & Development Laboratory Collaborative Team of the Year by the Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASA ALT)/Army Laboratory Assessment Group (ALG).

An element of TARDEC's Survivability Program, the **Full Spectrum Active Protection Close in Layered Shield (FCLAS)** is designed to provide vehicle survivability against close in threats normally associated with urban conflicts. The FCLAS is an affordable vehicle survivability solution that does not sacrifice tactical mobility. The program is seeking to provide essential timing, tracking, accuracy, miss distance and defeat capabilities, while trying to enclose technologies into a smoke tube launcher.

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The **Percussion-Actuated Nonelectric (PAN) Disrupter Mount** is a light-weight, shock-absorbent system affixed to existing TALON robots, which are widely used by Explosive Ordinance Disposal Units in Iraq and Afghanistan. This system combination allows the Soldier to keep his or her distance from an explosive device during disarmament. The PAN Disrupter Mounts are being distributed to Explosive Ordnance Disposal (EOD) Soldiers currently using TALON robots in Iraq and Afghanistan.

The **Omni-Directional Inspection System (ODIS)** is a remote-controllable (tele-operated) robotic vehicle inspection system that can be fitted with a camera or variety of sensors. ODIS provides Soldiers with a clear view of the underside of a vehicle, but more importantly it provides standoff. ODIS is currently deployed in Iraq and Afghanistan, and is supporting Homeland Defense efforts at air- and seaports and at the U.S. Capitol building.

TARDEC, headquartered at the Detroit Arsenal, Warren, Michigan, is responsible for developing and maintaining vehicles for all U.S. Armed Forces, many federal agencies and more than 60 foreign countries. TARDEC's National Automotive Center is the Army's official link to commercial industry, academia and government in developing new dual-use automotive technologies that meet the needs of both defense and commercial industries. Together, they lead the way in providing our Soldiers with vehicles and vehicle technologies that will increase survivability and ensure mobility on the battlefield while reducing design, manufacturing, operations and maintenance costs.

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